

THE
SOUTHERN AGRICULTURIST.

AUGUST, 1828.

PART I.
ORIGINAL CORRESPONDENCE.

ART. I.—*On the Culture of the Silk-Worm; by THOMAS SPALDING, of Georgia.*

The Secretary of the Treasury was directed by Congress, to procure information in relation to the growth and manufacture of Silk. In compliance with their resolution, he addressed Circulars to those from whom he thought he could get the information required. Among others, one was sent to Mr. Spalding, of Georgia, who has politely forwarded to us, his Answers to the Secretary's Queries.

Although the voluminous Report of the Secretary has come out, and embraces much information connected with the growth and manufacture of Silk, we have found Mr. Spalding's communication so interesting, that we cannot withhold it from our readers. We rejoice to find, that, even before the last meeting of Congress, the Government should have heard from the Southern States such language as this. Mr. Spalding, speaking of the necessity of giving an impulse to the cultivation of the Silk-Worm, says:—"It belongs then to the Government to give this impulse; and, in doing so, to extract the bitter feeling, which I can assure you, Sir, exists in the minds of the Farmer and the Planter, under the impression, that millions have been expended by the Government for the protection of Commerce—that millions have been subtracted from the product of their labours, under the form of duties and of imposts, for en-

"couraging and fostering Manufactories; but that neither the Executive nor the Legislative Government of this country, has taxed itself with one hour's deliberation, upon the multiplication or the improvement of the subjects of the industry of the Agriculturist."

Sir,—Your Circular of the 29th of June, upon the cultivation of Silk, I have received; and, although I have, of myself, no experience upon the subject, yet, (as it may possibly happen, that the very few persons among us, who may have had that experience, may not be among the number of those to whom your Circular is addressed,) I will answer, as far as my information extends, the inquiries you have submitted; and, that the answers may be the more distinct, they will be numbered in the order of the queries to which they stand as a reply.

1st. When Georgia was granted to certain proprietors, one of the motives alleged in the application for the grant was, that, from the climate of the region south of the river Savannah, the country was well adapted to the culture of Silk and Wine, and that these articles might be cultivated without the aid of Africans; so that the new colony would become a military barrier to the colonies north of it. A few persons were planted on the banks of the Savannah, in the year '33—but it was not until the year '36, that General Oglethorpe seriously undertook the settlement of Georgia, when he set himself down with his regiment at St. Simon's Island. We may well suppose, that it was the year '39, before his attention could, in any manner, be withdrawn from his military preparations, threatened as he was by a large Spanish force in Florida. He could not have turned his attention to any agricultural objects before that year, when a small colony of Swiss and Germans were located a few miles above Savannah, with the intention of engaging in the rearing and producing of Silk.

2nd. The Silk-Worm was, no doubt, obtained from Europe. I have often seen cocoons, with many of the characteristics of the Silk-Worm, as to size and so forth, suspended from other trees; but have seen nothing in them to invite experiment.

3rd. The Mulberry grows with great luxuriance in all its varieties in Georgia—the black, the red, the white and

the Paper or Chinese Mulberry. The black and red I know to be indigenous, and the white I believe to be so, because the three varieties are found intermingled in our native woodlands, and often of large growth. Every variety of our soil seems to suit the Mulberry. They grow well upon the sea-coast upon our hammock lands. They grow well upon the pine lands, a little in the interior; and I have them growing and bearing abundantly on the ditches that surround alluvial lands, that were in the culture of Rice.

4th. I believe there is much of fashion in this. The French and Italians prefer the white Mulberry. The Spaniards, I understand, prefer the red and black;—and the Spanish Silk is better than French, and at least as good as Italian. It is admitted upon all sides, that, although lettuce leaves will keep alive the Silk-Worm for a few days, they will disease, and, in the end, destroy the greater portion of the worms. In fact, it may be taken for granted, and every agriculturist knows it, that to every plant that grows, there is some particular insect attached, that lives upon that plant and no other. The idea of a substitution of food for the Silk-Worm upon a scale of usefulness, took its rise in the closet and not in the field, you may be assured. We are told by Lord Elgin and others, that Salimadin the Turk, lived to an hundred years of age upon corrosive sublimate, taking a drachm a day. Some Silk-Worms, like Salimadin, may learn to live upon the opium contained in the lettuce leaf; but I cannot think that is quite right to recommend either the one or the other, as a general food for men or worms.

5th. The Mulberry in all its varieties, may be raised either from seed, from cuttings, or by layers. If from seed, of course, the growth will be slower than from cuttings or layers. I should, therefore, suppose, that it would be better to have recourse to cuttings; as in doing so, you could select more distinctly the kind of Mulberry you might prefer; nor can I see any possible reason in that event, for having recourse, as they do in France, to ingrafting;—but, on the contrary, for the bulb that a graft produces, while it increases the quantity of fruit, will diminish the quantity of leaf, and the leaf is what we require for the worms. I have myself experienced some difficulty in raising the Mulberry from cuttings, which may be obviated, by taking the cuttings just as the leaf-buds begin to swell, and placing them in a

hot-bed, prepared in the usual gardening manner. If the seed is taken, it should be washed clean from the pulp—and after a bed has been well prepared of good, warm sandy-loam, not too dry, the seed should be wetted and rubbed over with slack lime, to make them separate, and then drilled at eighteen inches apart. If the weather should be dry and the season far advanced, it will be proper to water the bed, and to shade it from the sun by some loose brush-wood. In France, they allow the plants to stand five years in a nursery, thinning them out to two feet apart; but, in this country, I think they should be removed to where they are to stand the next autumn after they come up, that is, when they are from fifteen to eighteen months old. The fields to which they are to be removed, should, of course, be well broken up—and, as the best security for the young plants, I would recommend that such fields should be cultivated in Potatoes or Turnips, or some root crop, prohibiting small grain, Indian corn, or grass; all of which are destructive to young trees. There are no public nurseries in Georgia. Trees are placed at various distances, and, no doubt, different climates require different distances. I should take from fifteen feet to twenty feet each way, as my rule, if the tree is to be allowed to extend itself; if it is to be kept low, ten feet is far enough. The sun in our climate, if allowed to shine upon the roots of the trees, will injure them; and, as the Mulberry is stripped of its leaves every alternate year, it must suffer from the sun the year it is denuded. To prevent this, I would strip the alternate rows of trees annually. I see no benefit in merely dwarfing the plants; to do so, is to war against nature;—and, in the contest, the plant would sooner decline; add to which, it is labour without profit; for, if the young tree is once treaded down, it will spread, and be always within the reach of a man with a ladder. But I will here add a mode recommended by a Dr. Anderson, of Madras; not because I approve of it, but because he was a celebrated man, and because it will answer that part of your query. “Take the ripe berries of the Mulberry when they are full of juice and seeds. Next take a rough horse-hair line or rope, such as we dry linen on; and, with a good handful of ripe Mulberries, run your hand along the line, bruising the berries and mashing them as much as possible, as your hand runs along the line, so that the pulp and seeds of the berries may adhere to the rope or

hair line in great abundance. Next dig a trench in the ground where you wish to plant them, much like what is practised in kitchen-gardens in England for crops of various kinds. Next cut the rope or hair line into lengths, according to the length of the trench you wish made, and plunge the line full of mashed berries into the trench; then cover it over well with earth, always remembering to water well, which is essential to the success. The seeds of the berries thus sown will grow, and soon shoot out young suckers, which will bear young leaves, which are the best food for the Silk-Worm." The facility and rapidity with which young leaves may by this means be produced, is evident; for, as many rows of trenches may be thus filled as can be wished, and it can never be necessary to have "Mulberry trees higher than Raspberries, Currant, or Gooseberry bushes." Now, this would do very well for Dr. Anderson, for his garden experiment at Madras; but would certainly be very inadequate for the Silk grower upon a large scale.

6th. I must answer this query by the aid of Arthur Young, whose inquiries upon Silk were extended to France, Spain, and Italy. At twenty feet there would be an hundred trees to the acre. In France, at ten years, if well attended to, three hundred trees would give seventy-five quintals of leaves, which would furnish food for five ounces of seed or eggs, and which would produce two hundred and fifty pounds of cocoons, equal again to twenty-five pounds of Silk. As the trees advance in age, their product in leaves is increased. In Italy, the product at twenty years old, is three-fold at what it is at ten:—they go on increasing up to a five-fold result. All departure in cultivation of the Mulberry from the full-grown tree, would increase the labour, and shorten the life of the plant; make it more susceptible of the cold, and diminish its productiveness.

7th. To this query I have nothing to reply, but what I may glean from books, and other authority, having had no experience myself. The quality of the Silk appears throughout, to depend upon the health of the worm. The food upon which it is fed in countries where the Mulberry tree grows well, and is not, at any time, injured by frost, as in Spain and parts of Italy, the Silk is always of a superior quality, and is worth one-third more than the Silk of France;—while the Silk of Prussia, after all the labour and expense of the great Frederick, is only fit for the most inferior pur-

poses. The great means of preserving the health of the insects are, a free circulation of air, and cleanliness in every part of the establishment;—the weekly, if not daily use of that great corrector of mephetic air—lime. The appetite of the worm, will depend, of course, upon its health, and the quality of its food; but it is understood, the more kindly it feeds, and the more speedily it is brought to elaborate its web, the better will be the quality of that web, and the more profitable to the grower. The light and temperature that is best adapted to the worm, is that degree of light and temperature that would be found in a well-ventilated house, in a climate which is congenial to the worm. Men and women, and even children, though the latter more sparingly, may find employment in the cultivation of Silk. Men are particularly required for stripping the leaves of the Mulberry, which is a laborious work at the feeding season of the worm. Women are particularly adapted, from their tenderness to the hatching of the eggs, to the handling and removing the insects, and to the cleaning of the shelves and repositories of the insects. Children may be sparingly employed in some of the lighter parts of the work; but should not be much confined to the house, where the air is always unpleasant, and often unwholesome.

8th. As far as we know, the Silk-Worm was introduced direct from China into Greece. It was a single operation, executed by Missionary Monks, in the reign of Justinian. It was a difficult and dangerous experiment; and it is not likely, that the Monks entangled themselves with a variety of the worm. From Greece, the Silk-Worm has extended to the other southern kingdoms of Europe; and, although different countries and different treatment may have produced some small shades of variety, I cannot believe that there is any legitimate difference in the species which are now reared for the production of Silk in Europe. In all times, and in all countries, cocoons resembling the cocoons of the Silk-Worm have attracted the attention of speculative men. But at no time, and in no country, as far as we know, have any benefits resulted from experiments upon them.

9th. The climate of Georgia would admit of raising Silk in the open air, but they would be preyed upon by the multitude of birds to which we are incident. They would, no doubt too, be scattered and even destroyed by the storms of wind, and rain, and hail, which sometimes usher in our sum-

mers. I have, therefore, no doubt, that a house is necessary to secure them from these accidents ; but the building that is required, is neither large nor expensive. Of course the size must, in a great measure, depend upon the magnitude of the undertaking ; upon the number of your Silk-Worms, and the quantity of food that they might require.

The kind of house that I would recommend, should be weather-boarded, as being better adapted, if frequently white-washed without and within, for cleanliness, and for tempering both the heat and the cold, than any other building. A house twelve feet wide, and its length adapted to the extent of the undertaking, with windows on each side of it, near the ceiling, and revolving upon two pivots, with doors of entrance below, would be readily ventilated ;—for, happily for man, almost all foul air has the property of ascending and escaping, if allowed to do so, through the upper part of a room. This discovery, important as it is to health in all climates, was reserved for our countryman, Count Rumford. A frame-work of shelves standing in the centre of this room, with a space all round it, between the wall and the frame-work, for the air, and the attendants, is the proper receptacle for the worms and their food. The shelves might commence at two feet from the floor, and extend to six or seven feet, or as high as might be reached conveniently. Each shelf must consist of a drawer, into which the fragments of the leaves and the excrements of the worms would fall. Above these drawers, we will suppose two inches, a wire net-work should extend, upon which the leaves and the worms should be placed while feeding. The drawers should be taken out twice a-day, emptied of their offensive contents, and purified with lime-water ; of course, if any of the worms have fallen through, they should be re-placed upon the wire-work. It will be understood, that the drawer must not be made too large, or the attendants would be prevented reaching across, and cleaning the whole of the frame. In one of the ranges, the wire-work should be very fine, as the insects would require but little food in the beginning, and would be more apt to fall through the wire-grating. I give you a rough sketch of the house, and of its interior frame-work—and will now add an extract from the Annual Register of the year 1762, taken from a French work of the same year, without myself putting any faith in the experiment. “To know if Silk-Worms were as sensible of the signs of the weather, as the

author of the *Spectacle de la Nature*, imagines they are. About twelve hundred of these insects, just past their first moultings, were placed, the fifteenth of April, 1761, on some espalier Mulberry trees, breast high. Here they remained, exposed to all the rigour of the season, which, having been cold in the beginning, and afterwards very stormy, left scarce any hope of their doing well. Neither wind or rain, however, obliged them to take shelter under the rails of the espaliers, or the leaves of the trees. They endured every spirt of the rain, and all this bad weather on the same spot where it surprised them, just remaining motionless as long as it lasted. The storm past, they began to move again very briskly, devouring the leaves, though wet with the rain, without any seeming concern. Neither cold, moisture, heat, or thunder, made that impression upon them which there was reason to expect. Not one of them was attacked with any of those disorders, during which they are called, *fat worms*, *lean worms*, *yellow worms*, &c. They always continued exceedingly white; their moulting was, indeed, later and longer than it generally is when kept within doors, but free from any bad consequences. The greatest part of them perished for want of food, or rather for want of instinct to go in quest of it. Several died at the foot of the espaliers, when the wind and rain had beat them off the leaves. But it would be an easy matter to provide against the first of these inconveniencies, by removing them from one part of the tree to another; an assistance which few would require above thrice during their whole lives. The second inconvenience would, indeed, require more attendance, which, after all, might be of no use; as, probably, they receive some hurt in their fall. It did not appear that the birds, though very numerous in the place where this experiment was tried, destroyed many of them. These twelve hundred worms yielded five hundred and fifty cocoons, weighing two pounds and a half, Lyons weight, of fourteen ounces to the pound; and these cocoons produced above three ounces of the finest Silk ever obtained in France. But one of the cocoons were faulty, and not one of them were double; so that the operations requisite to get the Silk from them was not attended with any waste. This method, therefore, notwithstanding the loss of the worms with which it was attended, appeared, on calculation, more advantageous, in regard both to the quantity and quality of the Silk

obtained by it, than usually followed of feeding them within doors.

10th. There is no doubt, that in warm climates, more than one crop of Silk may be forced in the year; this is said to be done in China—but we know but little of the domestic economy of China. The best province for Silk in China, is Tchen Chiang, about the latitude of 28, which would give the climate of Georgia, as frosts are sometimes seen at Canton, in latitude 22. Frequent crops of Silk were produced by Dr. Anderson, at Madras, by the course extracted in the previous answers; but such a course could only be adapted to a garden, for it would be quite too expensive for field operations. The worms took forty days to go through all their changes at Madras. The difficulty is not to produce successive crops of worms that will produce them—but the difficulty only is, to procure successive crops of food for them. Arthur Young, before he entered Italy had heard much of their successive crops of Silk, which were attributed to a new variety of the worm, said to be lately introduced; but, when he reached the Milanese, he found that these reports had been exaggerated. He could no where find this new variety; but, on the contrary, he was explicitly told, that the common worm might be made to produce successive crops. But the Milanese Government had wisely prohibited this, as the too frequently stripping the leaves from the Mulberry trees, destroyed them; and this we must be satisfied of upon the smallest reflection. In climates congenial to Silk, the quantity of Silk produced, will only be limited by the quantity of food favourable for the Silk-Worm. Each Silk-Worm is capable of multiplying itself by two hundred and fifty fold; the germ then of the Silk-Worm is easily procured and multiplied;—but the warmer the climate is, the more necessary is the clothing of leaves to the tree that produces them. For, it is now well known, that the leaf contributes as much to the nourishment of the plant, by absorption from the atmosphere, as the roots, by absorption from the earth; besides being the lungs of the plant, and the instrument which keeps up its vital action. To strip these leaves, therefore, more than once a-year, would speedily destroy them; to strip them every year will even injure them. We may then, fairly conclude, that we are quite capable, in Georgia, of pro-

ducing in the year, successive crops of Silk; but that it would be unwise, and bad economy to attempt it.

11th. A general impression prevails, that lightning and thunder are very injurious to Silk-Worms. I rather suppose, myself, that this opinion is carried too far. I cannot find from inquiry, that the egg is at all affected by thunder; and at the feeding season, which, in Georgia, is the spring of the year, there is not a great deal of thunder and lightning; and, sheltered as they ought to be in houses, the detonation of the thunder could produce little else than a momentary checking of them in their feed. Bats and ants are, both of them, highly destructive to the worm; but against both of these enemies they can be guarded.

(To be continued.)

ART. II.—*Additional Information on the Cultivation of Clover*; by HUGH ROSE.

“St Thomas’ Parish, June 9, 1828.

Dear Sir,—In accordance with the wish expressed in your editorial note to my communication on the subject of Clover, I now, with much pleasure, take up my pen, to give you some more matured information respecting that most valuable plant. In my former letter, I stated to you, that I had sown a few acres of Clover late in November last; but I did not mention to you, that my seed was mixed with oats, *instead of ashes*. I was aware of some risk from the late planting, of having the young Clover destroyed by frost, unless it had the protection of some sheltering grain sown with it. I gave the preference to oats, intending to cut them in a green state, in order to liberate the Clover early in the spring. The oats have been a most luxuriant crop; and the Clover has been much injured by too much shade. I cut the oats in an unripe state on the 2nd inst., and found much of the Clover from four to eight inches high, and a little of it in blossom. It had come up irregularly, and is thin and unpromising. I fear it was planted carelessly, and was covered too heavily for so delicate a seed.

I entertain, Mr. Editor, the highest opinion of its value as an article of culture; and I think the period is not dis-

tant, when a small Clover-field will be as often seen as a rye-patch. Though Clover may flourish during the spring months on a *light soil*, yet, I am persuaded, that clay is best adapted to its growth throughout the summer. I think it incumbent on me to be explicit on the subject of cultivating Clover, as I believe it will promote the interest of individuals, and benefit society at large. Experience has convinced me, that Clover should never be intermixed and sown with other grain, being injurious to both, but ruinous to the former. For this pasture, the land *should be well prepared*, and the seed sown in the latter end of September, or early in October, when our native grasses are on the decline. If gypsum can be procured, being the most congenial manure to Clover, I would recommend, that four quarts of the Red Clover seed should be well mixed with a bushel of it, which will be an ample allowance for an acre. If gypsum cannot be obtained, either ashes or lime will be good substitutes for mixing the seed. I had a white oak plough constructed under my own direction, for drilling the land for Clover seed. The drills were eight inches apart, from centre to centre—were four inches wide, and four drills were made at a time, as shallow as possible. Having gone much into detail, on a subject, in my opinion, of considerable interest to individuals and the public, I have only to add my *confident belief*, that, where justice is done in preparing the soil, that the labour of the agriculturist will be amply rewarded by a plentiful harvest of Clover. With great esteem and respect, I am, dear Sir, your most obedient servant,

HUGH ROSE.

ART. III.—*Experiment in the Culture of Corn*; by JAMES CUTHBERT.

To the Chairman of the Committee on Premiums, of the South-Carolina Agricultural Society.

Mr. Chairman,—I submit to the consideration of the Committee on Premiums, the following statement of the product of a crop of Corn of thirty-one acres, planted on James' Island, in 1827.

Twenty acres planted from the 20th to the 25th of March, yielded 1391 baskets of Corn on the cob; averaging thirty-four bushels and two pecks of clean or shelled Corn per acre.

Seven acres planted the first week in April, yielded 437 baskets of Corn on the cob; averaging thirty-one bushels and a fraction of clean or shelled Corn per acre.

Four acres planted the first week in April, also yielded 225 baskets of Corn on the cob; averaging twenty-eight bushels and one peck of clean or shelled Corn per acre.

Two of the above-mentioned acres, (one of the twenty-one acres, and one of the twenty acres,) were harvested on the 1st of October, in the presence of Messrs. Hume, sen., Benjamin Fuller, sen., Edward B. Lining, Christopher Jenkins, Thomas H. Deas, Joseph B. Rivers, Virgil Maxey, and J. B. Giraudeau, when the following results were obtained:—

| | <i>bush. pek. qts.</i> | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---|---|
| The first acre yielded of clean or shelled Corn | 32 | 2 | |
| The second acre yielded of clean or shelled Corn | 35 | 2 | 3 |
| Add, for three rows to complete this acre, which were taken off after the field was run out, at the average product of eighty-nine rows, is equal to | - | - | - |
| | | 1 | 6 |
| | <hr/> | | |
| | 36 | 3 | 1 |

These three different portions of land were cultivated alike in every respect, except that of the thinning, or rather the distances the plants were left on the rows. The rows on all, were four and a half feet apart. On the twenty acres, two plants were left in a hole, at every two and a half feet distance. On the seven acres, one plant was left in a hole at every two and a half feet. On the four acres, one plant was left in a hole at every foot.

Previously to planting, the land was ploughed deep, with Wood's patent plough, and afterwards cross ploughed with the cultivator, and then harrowed. When the ground was thus prepared, trenches were formed with a bull-tongue plough, into which, at certain distances, the grains of Corn were thrown. A light barrow then passing over the field, covered effectually the grain.

The first working that was given to the *twenty acres*, which was the first planted, was about the middle of April. This was merely to loosen the earth about the plants—the alleys were left altogether untouched. About ten days afterwards, the alleys were worked with the cultivator, which, at the same time, threw a little fresh earth about the Corn. Early in May, when the Corn had attained a growth from twelve to sixteen inches, manure was applied, strewed along each side of the rows of Corn. This was immediately covered by one of the patent or corn ploughs, following the persons who were manuring. When the manure was covered, the earth that had been thrown up by the ploughs, was immediately hauled about the Corn with hoes. This was the commencement of forming a bed. In June, another working was given. At this time, the ploughs passed and re-passed through the middle of the alleys, forming one deep furrow;—the earth thrown out of the furrow was carefully drawn to the bottom of the bed with hoes, with the view of widening it; but, by no means, adding to its height.

The quantity of manure used, varied from 450 to 650 bushels to the acre. The kind and quality of the manure varied also, according to circumstances. The manures used were cotton-seed and pond, or untried earth united—and rotted pen-manure and leaves from the woods, mixed together. When the soil was very light, the cotton-seed and pond-earth were used. When there was an appearance of more consistency and freshness, the leaves and pen-manure were applied. The quantity of leaves used to that of the pen-manure, was generally in the proportion of three cart loads of the one, to one cart load of the other.

Some parts of the above-mentioned land, when planted some years ago in Corn, yielded an average of only eight bushels of clean Corn to the acre. This land has been kept in cultivation, in some crop or other, every year since, and manured annually. The crop producing the eight bushels, was tended with care; and the season was as favourable for crops of Corn as the last;—but the Corn was planted on the list, and at the distance of five feet square, and two stalks in a hill. The land was not manured; it was the first year I took possession of the plantation—therefore, I had not the time or means of procuring manure. My impression is, that the increased production-realized the last

year, was owing more to the multiplying the number of plants, than to the high manuring; though, I am convinced, that abundant manuring is an essential attendant on close planting.

Much of the land cultivated in Corn, is of a light quality. In some parts of it you might dig from four to five feet, without coming to clay.

The quantity of blades produced from the thirty-one acres, exceeded 22,000 lbs. A moderate crop of peas was gathered from the twenty acres; the peas were injured by the excessive falls of rain we had in July and August.

There were fourteen days in June that elapsed without any rain falling, sufficient to wet the ground.

JAMES CUTHBERT.

February 22, 1828.

ART. IV.—*Extract of a Letter from WILLIAM PRINCE, Proprietor of the Linnean Botanic Garden, New-York, to the EDITOR.*

Sir,—In answer to your queries I have to state, that I think the Pepper plant would only flourish in the southern parts of Florida. It requires that the mercury should not fall much below 50° of Fahrenheit, at any season. The Tea will bear a considerable degree of cold, and even some frost. It is less tender than the Gardenia Florida, which thrives in open air at Charleston. These remarks apply equally to the *Green* and *Bohea*. The Camphor withstood the winter *last past* in Mr. Young's garden, at Savannah; and that gentleman thinks it as hardy as the Sassafras. My opinion is, the Camphor cannot fail to succeed in open air in any part of South-Carolina. The Cinnamon is more tender, and would require the climate of Florida.

I have plenty of *Green* and *Bohea* Tea plants, good established ones. Also, Camphor, and black Pepper. Of the Cinnamon I have but two, and could spare but one.

Your's most respectfully,

WILLIAM PRINCE.

January 7, 1828.

ART. V.—*On the Pounding of Rice; by a CITY RUSTIC.*

Sir,—I am permitted to put upon record, in your useful Work, the result of an experiment in beating Rice, recently made on a plantation where animal power is alone used. The accuracy of it is proved by the weights which are annexed to each item, produced from the rough Rice, in the regular process of pounding. And, when it is added, that the market Rice brought the highest price then going, it will satisfy every Planter, however limited his crop may be, that preparing that crop at home, is within his reach.

Although I here advocate the *home* preparation of Rice, I have been greatly surprised at the futility of some of the arguments against exporting it to be beat in Europe. I shall trouble you with a few remarks on only one of these. It is that, which supposes our trade in rough Rice, will be interfered with, by the British importing from their East India possessions, what they call *Paddy*.

I believe it will be admitted, that East India clean or market Rice, has never *materially* interfered with our trade to Europe. The reason is evident;—we are, comparatively, in the vicinity of the old countries; and the shortness of the voyage enables us to undersell in this article of trade. If the freight of *clean Rice*, from the East Indies, has hitherto prevented its coming in competition with ours as *rough Rice*, paying a double freight, from its having double the bulk, it will scarcely hold out any new inducement to the speculative merchant. But, when it is further recollected that rough Rice is not only subject to double freight, but is then only worth one-fourth of the price of market Rice, the impossibility of its interfering must strike every one.

I am, &c.

A CITY RUSTIC.

The following interesting experiment was made by Mr. Rowand, Secretary to the Agricultural Society of South-Carolina; showing the weights of the various products yielded from rough Rice in beating, as well as the measurement of each.

| | |
|------------------------------------------------------------------|--------------|
| 21 bushels rough Rice, weighed 48 lbs. per bushel, | lbs. 1008 |
| <i>Produce when Ground.</i> | |
| <i>Chaff</i> , 20 bushels, 1 peck, 6 quarts, at 9 lbs. per bush. | 184 |
| <i>Shelled Rice</i> , 14 bushels, at 58 lbs. per bushel, - | 812 |
| | <hr/> |
| | 996 |
| Deficiency in the first process, - - - | 12 |
| | <hr/> |
| | 1008 |

On completing the beating, it yielded as follows:—

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <i>Clean Rice</i> , 10 bush. 1 peck, 7 quarts, at 62 lbs. pr. b. | lbs. 649 |
| <i>Small Rice</i> , 3 pecks, 3 quarts, at 62 lbs. per bushel, | 53 |
| <i>Rice Flour</i> , 2 bushels, 3 pecks, at 34 lbs. per bushel, | 93 |
| <i>Small Rice Chaff</i> , 1 peck, 4 quarts, weighing, - | 12½ |
| | <hr/> |
| | 807½ |
| <i>Chaff</i> , as above stated, 20 b. 1 p. 6 q. at 9 lbs. per. b. | 184 |
| | <hr/> |
| | 991½ |
| Deficiency, being a loss in the process of beating, of about 1½ per cent.; the mill cut not being taken into consideration (supposed to be equal to 1 per cent.) - - - | 16½ |
| | <hr/> |
| | 1008 |
| 1940 bushels of this Rice, would, therefore, yield | |
| 100 barrels of 600 each; or, - - | 60,000 |
| 78 bushels of small Rice, weighing, - - | 4836 |
| 254 bushels of pure Rice flour, <i>unmixed</i> . | |

ART. VI.—*Queries on the Culture of Rice; by WILLIAM WASHINGTON, with Answers by CHARLES E. ROWAND*

(Continued from page 311.)

"Charleston, July 5, 1827.

Dear Sir,—I received your Circular, containing a set of Queries upon planting Rice. As far as my limited knowledge, founded upon practice, will admit, it will afford me much satisfaction to communicate; and a still greater pleasure, could I suppose my Answers would be instrumental in throwing one ray of light upon the subject. My plantation being contiguous to the city of Charleston, affords me

frequent opportunities to visit it, and be witness to any experiment I may think proper to attempt; thereby enabling me to speak with more accuracy than coming through the medium of an overseer or a negro driver. I will, therefore, confine myself to such facts as have come within my own knowledge, arising from experiments made upon the plantation. To your first question.

1st. What preparation do you give your land before you begin to plant?

Ans. As soon as frost has been severe enough to destroy or kill the vegetation of the old stubble, fire is applied upon a windy day, which soon has the desired effect. The ditches and quarter drains are cleaned out, and the plough commences its operation, and kept employed during the winter months. About the latter end of February, the fields are flooded deep, and kept so, until the day before I am ready to plant, by which time, the sods have nearly all melted or mouldered away, and not a symptom of vegetation to be seen.

2nd. When do you begin to plant?

Ans. On or about the 25th of March.

3d. Do you select your seed, and how do you know the best seed? Do you prefer your seed from the North or South, and how often do you change your seed?

Ans. I select my seed every year; in doing which, I attend strictly to the observance of a few minutiae, which I think indispensably necessary to the obtaining it, and keeping it free from volunteer or red rice. I never admit horned cattle into my rice fields; they are one of the principal causes which tend to pollute the land; they saunter about, breaking down the banks and sides of the ditches and quarter drains, besides treading in whatever grains may have escaped the fire which had already been applied. I annually devote one or two squares to highland culture—such as cotton, corn, barley or oats; into which I plant choice hand-picked seed rice. I continue this rotation until all my fields have been planted; by which means, all volunteer rice is got rid of, and a great deal of water-grasses destroyed. To obtain the best seed, by which I suppose you mean the largest and heaviest grain free from red, after running it through the wind-fan, I make use of Mr. Duprix's pendulum screen, originally intended for raying rice, which separates, in one division, the dust and grass seeds—and in another,

the smaller grains of rough rice are collected; by which operation, the largest and heaviest are kept by themselves, and reserved for seed.

I have never tried the effect of seed procured as far north as North-Carolina: but I incline to think, that an extreme either way, would be beneficial. A change of seed every third year, as with all other vegetables, is certainly advisable.

4th. How many rows to the task or quarter of an acre? How many bushels of seed to the acre?

Ans. I always put eighty-four rows in a quarter of an acre, and make use of a trenching plough drawn by one horse, the tynes of which, are fifteen inches apart. I plant two bushels of seed to an acre, striking the half bushel.

5th. Do you scatter in the trenches, or, as it is technically called, string plant?

Ans. Many years ago, it was my practice to plant in a broad trench, and scatter the seed, to give room for the rice to tiller. Hearing so much of the string planting, I adopted it one or two years; but, discovering no advantage, I returned to my old mode, and continue the broad trench, scattering the seed.

6th. Do you point-flow, and if so, assign the reasons?

Ans. I never did approve of the point-flow, thinking it liable to do more injury than good to rice, in so young a state. I therefore do not practice it.

7th. How many times do you hoe before you put on the water?

Ans. As soon as my rice becomes grassy, and is of sufficient height to bear water, I hoe it; turning the sod deep and well over; taking care, at the same time, that it does not cover or interfere with the young rice. I then open the trunks and flow deep, covering the rice.

8th. How long do you keep on the water?

Ans. Immediately after hoeing the rice, I put on the water, covering it very deep, in order to destroy the re-vegetation of the grass already crippled by the hoe. It is kept on three, four, or five days, according to the height of the rice. A leak is then made at the trunk door, and continued until the tops of the rice are seen, and a general verdure appears upon the surface; the leak is then stopped, and the water suffered to remain until the rice stands erect. The grass has, by this time, made progress; the water is then

let off, and the hoe again applied, with directions to pick clean.

9th. If in grass, would you put on the water or not? What do you call a good crop to the acre or to the hand?

Ans. If in grass, and not convenient or ready for the hoe, I would, by all means, put on the water, and keep it on until ready; then turn off the water, and hoe as clean as possible. The grass will readily yield to the hoe, from its being run up by the water. I think two barrels and a half to an acre a very good crop. Good land, in very high order, well attended, and favourable seasons, will bring three barrels to an acre, which I call a very great crop. I plant, generally, five acres to the hand, besides provisions. I make use of the plough and horse-hoe harrow, in attending my provision or high land crop.

10th. Have you ever ploughed your land whilst the rice crop was growing, or do you object to it, and why?

Ans. I never did make use of the plough in the rice crop, but have heard of its being used with success, by many good Planters.

11th. Do you keep your land dry all the winter, or do you flow it?

Ans. My land is always kept dry during the winter, to enable me to clean out my ditches and drains, as also to plough up the rice land. The water is never put on until about the latter end of February, at which time, it is deeply flowed, for the purpose of destroying vegetation, and kept on until the day before I am ready to plant. The water is then let off, square by square, as I proceed in planting. The vegetation being completely destroyed, the land presents a jet black appearance. The rice is then put into the ground.

12th. Have you ever used salt or brackish water, and what has been the result? Have you ever used lime on your land, and how do you apply it?

Ans. I never admit salt or brackish water into my rice fields, nor have I ever made use of lime upon my rice land.

13th. How do you know the best time to cut Rice, and what is the task of a labourer in harvest?

Ans. The general criterion which guides me, in this respect, is, when the rice upon the ear is ripe to within one inch of the bottom. Whenever, however, I am satisfied in my mind, that the grains are filled, I let off the water, which

event takes place about ten or twelve days before harvest. The usual task for a labourer in regular harvest is, to cut one task in the morning—tie, and carry home one task in the afternoon, if the distance is not too great.

14th. Is there any peculiarity in your preparation of rice for market?

Ans. I make use of no peculiarity, except, that after the rough rice has been ground in the usual way, it is rayed in one of Mr. Duprix's pendulum screens, which takes out the dust and mill cut,—separating, at the same time, the rough from the ground rice. The rough is carried back to the mill to be ground over. The rice goes much purer to the mortar. After coming from the mortar, it is run twice through the rolling screen and brush.

15th. Have you ever cultivated Guinea Corn as a provision crop, and if so, what do you think of it? Do you ever judge by the roots of the health of your rice?

Ans. I have never inspected the roots of the rice while growing. My judgment of its health has been altogether regulated by its general appearance. I have never cultivated Guinea Corn as a crop.

16th. Should the river or creek on which your lands are situated turn salt from a great drought, what mode of attendance would you pursue? Would you take in water before it did turn salt, at a time when the rice was not in actual want, or would you let the water by? Do you ever hoe your rice, while your fields are filled with water?

My plantation is situated upon the north-east branch of Stono river. After a drought it becomes salt. Whatever stage my rice is in, (provided it is high enough to bear water,) I never let the water pass by, but avail myself of the opportunity, by opening the trunks before the creek becomes salt, flowing as deep as the rice will permit. I am thereby enabled to stand longer, the effects of the drought, than if the water had not been taken in. If the drought continues, I allow the water to soak up. My regular hoeings are continued—chopping the grass and stirring the earth in the water. It is a slovenly way of doing business; but, necessity has no law, and I am perfectly satisfied, it is better to adopt such a treatment, than to let the water pass by. I have practised this mode whenever the creek has become salt, and find the rice makes a very good turn out.

Before I conclude, I will make one further observation, respecting the water being allowed to soak up. I sometimes deviate from this practice, in as much, as should the rice assume a pale, yellow, and sickly appearance, from the water being kept on for so long a time in such an impure state. It is then turned off, the fields ran dry, and await the issue of the creek becoming fresh again.

If you think the above answers worthy of a place in the Circulars which you are sending about to various Planters, it will afford me much pleasure to have it considered so.

I remain, very respectfully, you most obedient servant,

CHARLES E. ROWAND.

ART. VII.—*On Manufacturing in the South.*

We have received several valuable communications, on manufacturing negro cloth, blankets, &c.; and valuable, especially for the pure and patriotic, the true southern spirit with which they are written.

While we go hand in hand with these real Americans, in our opinion, of the late measures of the General Government, we must differ from them altogether in the propriety, or even possibility of our becoming, in South-Carolina or Georgia, a manufacturing people.

If we could, ourselves, that is, those agriculturists who are to own or conduct such establishments, become mere machines, to be set in motion by steam, by water, or animal power, it might be possible to make a manufacturer of a Southern Planter, or a Southern man;—but, until we can be acted upon in this way, we are confident we shall never succeed; and we would strongly recommend to our friends and readers, not to meddle with manufacturing for profit, or to be concerned in manufactories, even for the supply of their own plantations.

Every thing connected with trade, but more especially with the manufacturing branches of it, require a peculiar way of thinking on subjects of economy,—and a yet more peculiar art in practising it, which can seldom be imbibed in these Southern States. Our whole education and habits are in direct opposition to it—and this from our earliest

years. However, our reason may induce us to think well of saving. However it may appear to be for our interest to economise, it seems as if nothing but necessity will make a Carolinian truly economical; nothing whatever, so rigidly parsimonious, as to stand a competition in manufacturing, with our present *coercers*.

That negroes can attend in cotton factories, and their masters overlook them, is admitted; but the mere operative part is the least of such an undertaking. There must be an untiring vigilance on the part of the owner of a factory, to save at every turn of his machinery; to save in the purchase of all his materials, even in all the numerous trifles he may require; he must know how to bargain well in the sale of his goods; how to carry on his business upon the *little*, as well as upon the *great* scale. He requires, besides, able, industrious, and honest foremen, managers, or assistants;—and where are those to be met with? In every other country they are to be found, with difficulty; but, in Carolina, they do not exist. We all know how rare it is to get an industrious, economical overseer,—one who is saving of time, labour, and expense;—to find even a mere faithful key-keeper is scarcely possible; and how much more difficult is it, when they are met with, to keep them even for a year or two.

How can we then expect to create a class of men of a distinct description, new to our country, where the other older class—one so much more and so much longer needed, is not yet formed? Shall we be more successful in making overseers of cotton spinning and weaving, than we have been in making the every-day overseers of our plantations? We fear not,—nay, we will speak more strongly, we cannot; and without them we cannot manufacture.

In speaking of manufacturing, we have considered it as connected with profit. We do not include in our observations, therefore, domestic spinning and weaving, or making homespun, as it is called, *at home*. To this most useful and excellent kind of economy, it was our wish to have called the attention of our numerous agricultural readers in the lower country, and to have made a few simple observations expressive of our ideas upon the subject.

In most Carolina Planters' families, there is a superfluity of servants. If each of the females were made to spin a small proportion of cotton and wool every evening, the advantage would be immense to the family, in the excellent

clothing, practise would soon afford, by the aid of one hand employed as a weaver. In this latter part, there are, no doubt, some difficulties, arising from the awkwardness and dulness of the weaver, and the small quantity of work done by one person in a day. If the custom were introduced, of having the loom attached to the Planter's family, and not to the plantation, the first would soon be got over, more particularly, if the ladies allowed their attention to be enlisted in this useful work. They are more persevering and better managers; and the comfort of having abundance of various kinds of cloth, much of it of superior appearance, would be so great, that it never would be afterwards abandoned. By the introduction of the fly-shuttle, the quantity of cloth which a tolerable hand would weave in a day, would be increased to upwards of twenty or thirty yards, and better cloth made; for the fly-shuttle requires the use of but one of the weaver's hands for the widest cloths, and needs no other attention but to watch the thread.—EDITOR.

ART. VIII.—*Brief Notes on the Agricultural Resources of South-Carolina; by a CITY RUSTIC.*

A great field lies open to our Farmers and Planters in the profits of our live stock and dairies; for live cattle, hogs, and sheep, can be managed with few hands, and at small expense.

Charleston alone consumes considerable quantities of bacon, pork, lard, salt beef, salt butter, and cheese. All these may be said to be supplied by the states north of us; for the quantities furnished by the upper country are small in proportion; while nothing would be easier or more advantageous to our own agriculturists, than taking the whole supply wanted, upon themselves.

But the consumption of Charleston is not all;—South-Carolina ought to furnish, and can, furnish her quota of all these enumerated articles for exportation also. The intercourse between this place and the West Indies, and adjoining coast of America, is conveniently carried on; for the voyage is much shorter than from most of the Atlantic ports, and is, therefore, peculiarly adapted for a trade in live stock.

The annual exportation from the United States, to the countries already mentioned, as reported by the Secretary of the Treasury, is,

Of salted beef, in barrels, about 60,000 barrels ;

“ live cattle, from 2 to 3,000 head ;

“ live hogs, from 10 to 12,000 head ;

“ salted pork, in barrels, upwards of 50,000 barrels ;

“ hams, bacon, &c. a million and a half lbs. weight ;

“ lard, six millions of lbs. weight ;

“ cheese, six hundred thousand lbs. weight.

It would be difficult to account to those who have never attempted to sell live stock in Charleston, why Planters do not more frequently bring down their cattle for sale. Those who have tried it, comprehend all the difficulties ; and it is to them, and especially the upper country Farmers, I now address myself, with the view of endeavouring to point out the remedy.

On the present system of selling cattle, the Planter is altogether in the power of one set of purchasers. If a combination takes place amongst them, than which nothing is easier, the Planter has no other remedy, but to take the miserable price the first comer offers, or to drive back his stock, and turn it loose on the plantation ; for cattle brought for sale, are seldom seen or heard of by any other persons. We want, therefore, a public cattle market in the vicinity of Charleston ;—a Smithfield, where all the purchasers would necessarily be assembled, and when, if the present purchasers were not disposed to buy, other persons might be inclined ; as, for instance, merchants and foreigners to export them—the lower country Planters for stocking their plantations—others, in speculation for a rise in the market, &c.

To persons coming from a distance, this would be a great convenience, saving much time, trouble, and expense. But, in addition to the public cattle-market, I would propose to erect a public slaughter-house, in which alone, all stock, of every description should be killed for the city market. Adjoining the slaughter-house, it is further proposed, to erect buildings suitable for curing beef and pork, by pickling, smoking, &c. ;—and, finally, that a weekly market-day, for the sale of live cattle, &c. should be established by law, on which day alone, the cattle-market shall be open.

In this market, all stock would be recorded by a clerk, with brands, ear, and flesh marks, and the names of sellers and

buyers. In the slaughter-house, a record of a similar kind would be kept also. It is scarcely necessary to state, that, in the face of a public sale, in open market, if a public slaughter-house, open to broad day, and to all who choose to look into it, few stolen creatures would be offered for sale by any one. The price of live cattle, of calves, sheep, and hogs, would not, therefore, be depreciated by the interference of dealers of this description, who always sell below the value. But, in addition to this security, the advantage of a public slaughter-house would be this, that, if no one would buy, the Farmer could have his stock killed without inconvenience; and, by selling it in market as butcher's meat, at a very low price, compel some one to come forward on fair terms, and deal for a reasonable profit, or get rid of it himself without loss. It is to be hoped, that the facility given to Planters to get rid of their stock, would soon bring more to Charleston, than the mere consumption of that place would require. In this case, as trade is the exchange of the superfluities of one country for those of some other, our cattle and hogs would soon find their way to the Havanna, and other West India ports, either alive, or through the conveniences of the slaughter and curing houses, in the shape of salt beef, pork, hams, bacon, lard, &c. It would thus be seldom necessary to carry back live stock for want of sale, or to sacrifice to any particular set of purchasers.

In the sale of lean cattle, of broken or unbroken oxen, of live stock belonging to estates about to be sold off,—the advantages and conveniences of a public market would be great.

My notes on this interesting subject, are the reverse of brief; but the following facts explain so well some of the difficulties met with in raising and selling live stock, that agriculturists, generally, will excuse my adding them.

At the session of the Court of Common Pleas, before the last, the case of *Gelzer vs. Gooderich*, was decided in favour of the plaintiff. An appeal was made to the Constitutional Court, and the verdict confirmed, as to every point which concerns the public. The case was this:—certain negroes belonging to the defendant, were permitted by their owner, to purchase cattle, and to kill and sell the meat in market. Certain other negroes who were regular cattle thieves, stole cattle from Mr. Gelzer, and offered them for sale. Good-

erich's negroes were the purchasers,—killed them, and sold the meat in the Charleston market openly.

At the beginning of last Court, another suit came on of a different kind. It was *Clark vs. sundry persons*, for a libel. It appeared that Mr. Clark, a drover, brought in from Kentucky a herd of cattle, which he offered for sale. Not being able to sell them for a greater price than thirty-six dollars per head. He determined to have them killed and disposed of as butcher's meat. To help the sale, he advertised to sell beef of the best quality, at six and a quarter cents per pound. He had begun to sell his beef accordingly, and it was proved by the evidences of the Commissioners of the market, their clerk, and other respectable witnesses, that the beef was excellent of its kind. Some of the butchers conceiving that this interfered with their arrangements, put in an advertisement in opposition, *stating it to be unsound*. The consequence of this was, to stop the sale of Clark's meat, by which he lost nearly the whole value of sixty head of fine cattle. Verdict for the plaintiff, twelve hundred dollars, and costs!

The highest price offered for these beeves alive, was \$36 per head; their average weight was estimated at 600 to 650 lbs. nett weight, each, the four quarters; that is, it appeared from the testimony in court, that each beef would yield 600 to 650 lbs. for sale, and this, when sold at 6½ cts. per lb. the price advertised by Clark, would have given him upwards of \$40 each;—for, in addition to the four quarters, the skin, head, tallow, &c. (technically called the *fifth quarter*,) sell readily, and well.

If the butchers had been allowed to purchase these cattle at \$36 per head, and had sold the meat at 10 cents per lb., their profit would have been much above 75 per cent. If sold at 12½ cents per lb.; it would have been upwards of 120 per cent.

Mr. ———, a Virginian, drove in from the neighbourhood of the Sweet Springs, in December last, 150 head of sheep. They were offered for sale, but not more than one dollar and a half *average price*, could be obtained per head. Like Mr. Clark, the Virginian determined to kill and sell his sheep himself, rather than lose his labour in coming so far. Accordingly, he also advertised, and succeeded in disposing of his whole flock. The price he got he stated to be equal to four dollars per head, selling mutton, at 6½ to

8 cents per lb. If the parties willing to purchase, had bought the sheep on their own terms, viz. one dollar and a half each, and had sold mutton at only $12\frac{1}{2}$ cents per lb. they would have had a profit of upwards of 300 per cent. But they generally sell mutton from 7d. to 9d; and, therefore, would have got much more.

The price of calves in May, was three and four dollars; I was unable to get more for mine, my neighbours could not get more for theirs, and Planters, who sold from other parts of the country, were also obliged to take three or four dollars. With very little calculation any one will perceive, that the profit in veal must be at the same ratio as beef and mutton.

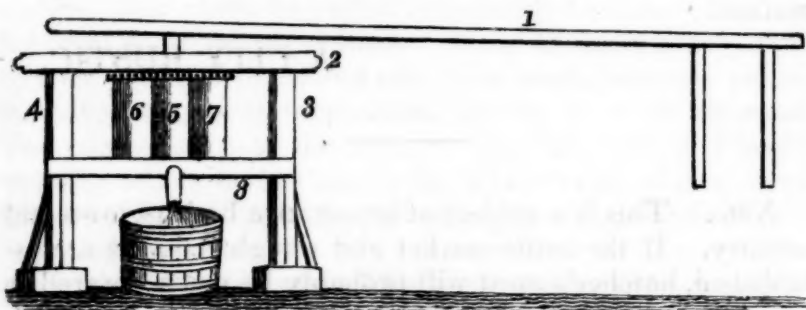
A CITY RUSTIC.

Note. This is a subject of importance both to town and country. If the cattle-market and slaughter-house are established, butcher's meat will probably be much lowered in price to the inhabitants of Charleston. This, of course, will produce a greater consumption, which will greatly benefit the Farmer, and that, without bringing down the price of cattle; for the prices of cattle and of butcher's meat, are not, at present, in relative proportion to each other. From this cause, supplies are kept back by the country people, to the great disadvantage of the town; and town prices are kept up, while the countryman loses the sale of his live stock. These evils will be remedied, we believe, by the means suggested. An attentive perusal of the facts proved in court, in the case of Clarke, and of those stated by the Virginian himself, to the writer, will satisfy every agriculturist on this point. We are imperiously called upon by the conduct of our Northern brethren, to bring forward all the resources of the Southern States. When we reflect on the great number of cattle now altogether unprofitable to their owners and to South-Carolina;—when we recollect the immense tracts of country, especially of inland swamp, so well suited for raising large herds of cattle, with the aid of very few negroes,—we think the subject is really an important one, and deserving the attention of every Planter.

If any of our readers have turned their attention to it; viz. to the appropriation of vacant lands and deserted plantations, to raising live stock, we would be glad to have their thoughts upon the subject, or, in fact, on raising stock in any way.—*Ed. So. Agriculturist.*

ART. IX.—Plan of a cheap Sugar-Mill for Grinding Cane.

(See Colonel Hazard's Letter, page 256.)



Explanation.

- No. 1 Represents the sweep or arm 30 to 40 feet long, which turns the centre cylinder, No. 5. At the end of this arm, are fixed, perpendicular hanging pieces, (as in the drawing,) on a single tree or tug, for the horse to draw by.
2. A girder or plate 10 feet long, 4 to 6 inches thick, and three feet wide.
- 3 4. On two studs 10 feet high, 10 inches by 12, framed into oak blocks, and strongly braced on three sides.
- 5 6 7. Three cylinders 3 feet long, 18 inches or 2 feet in diameter. Each cylinder is fitted with cogs near the top so that when No. 5 is set in motion, 6 and 7 follow.
8. A bed-sill of the same dimensions as the girder, framed into the studs or posts with stout tenants. This sill must have grooves dug out on its upper side, to receive the juice from the rollers, and convey it to the spout. In order to regulate the

spaces between the rollers, mortices must be made in the plate as well as in the bed-sill, on the outer side of the gudgeons, of rollers No. 6 and 7. In these mortices, wooden keys or wedges are fitted, which, being driven up tight against the gudgeons, or loosened from them, regulate the space for grinding the Canes. Platforms must also be erected in front and at the back of the machine to receive the Canes, both before and after passing through the cylinders. These three last described parts could not be well introduced into the drawing.

The machine from which the above was taken, was put up by a jobbing plantation carpenter. The rollers may be made of live oak, black gum, or some other close grained wood.

ART. X.—*On the Wolf, in reply to a "NOVICE."*

Extract of a letter to the Editor, dated Philadelphia, April 18, 1828.

"I observed a paper in your last number, on 'Wolf in Cattle,' as they are called by some *cow-leeches*; but, in common language, maggots, deposited in July and August, by the gad-fly, upon the backs of neat cattle.

We do not regard them. Some acute English writers, (White among them,) ascribe useful results to them, as Dr. Physick considers boils and pimples useful to a boy in the spring. If the 'Novice' will give ample doses of *Indian corn meal*, he and his yearlings will defy the effects of the worms.

The disease which our Farmers call the 'Wolf,' is exhibited by a soft place in the tail. A deep incision from the *the commencement to the end* of the part thus affected, is essential in this case. An application of salt, and a bandage, applied *as the ribband to a long cue*, when the cut is long, I have always found successful. Care must be taken that the ligature be not made too *tight*, or mortification will ensue."

PART II.

SELECTIONS.

ART. I.—*Remarks on the Olive Tree.*

From Mr. Jefferson's Letter to the Agricultural Society of South-Carolina; referred to in our last number, page 302.

The Olive is a tree the least known in America, and yet the most worthy of being known. Of all the gifts of Heaven to man, it is next to the most precious, if it be not the most precious. Perhaps it may claim a preference even to bread; because there is such an infinitude of vegetables, which it renders a proper and comfortable nourishment. In passing the Alps at the Col de Tende, where they are mere masses of rock, whenever there happens to be a little soil, there are a number of Olive-Trees, and a village supported by them. Take away these trees, and the same ground in corn would not support a single family. A pound of oil which can be bought for 3d. or 4d. sterling, is equivalent to many pounds of flesh by the quantity of vegetables, it will prepare and render fit and comfortable food. Without this, the country of Provence, and territory of Genoa, would not support one-half, perhaps not one-third of their present inhabitants. The nature of the soil is of little consequence, if it be dry. The trees are planted from fifteen to twenty feet apart, and when tolerably good, will yield fifteen to twenty pounds of oil, yearly, one with another. There are trees which yield much more. They begin to render good crops at twenty years old, and last till killed by cold, which happens at some time or other, even in their best positions in France; but they put out again from their roots. In Italy, I am told, they have trees two hundred years old. They afford an easy, but constant employment through the year, and require so little nourishment, that, if the soil be fit for any other production, it may be cultivated among the Olive-Trees, without injuring them. Wherever the Orange will stand at all, experience shows, the Olive will stand well, being a hardier tree.

Notwithstanding the great quantity of oil made in France, they have not enough for their own consumption; and, therefore, import from other countries. This is an article, the consumption of which, will always keep pace with its production. Raise it, and it begets its own demand. Little is carried to America, because Europe has it not to spare; we, therefore, have not learnt the use of it. But cover the Southern States with it, and every man will become a consumer of it, within whose reach it can be brought, in point of price.

ART. II.—*On Ashes, Lime, Street Manures, &c.*; by
B. B. COOPER.

[FROM THE AGRICULTURAL MAGAZINE.]

Dear Sir,—In compliance with your request, I embrace the first leisure moment to answer your inquiries on the subject of my experience in the use of manures, &c.

Question 1. When did you commence the use of ashes? The price given? The quantity used, &c.

Ans. Twenty-two years since; the quantity then used, from twenty to thirty cart loads, (of about sixteen bushels the load,) per acre; price, at that time, from twenty-five to thirty cents the load. For the last five years, the price has been varied from one dollar and ten cents, to one dollar and thirty cents, at the factory at Philadelphia; freight and other expenses to be added. When I commenced, but few farmers purchased ashes; they were generally taken off by New-England and Long-Island sloops, as return cargoes. At this time, the demand is so great, but few, if any, are exported; they are principally used by the Jersey farmers, (with a few in the county of Bucks, near the Delaware.) They appear better adapted to cool the warm lands of Jersey, than to warm the cold clay land of Pennsylvania, where they are but seldom used. As they have advanced much in price, I now use from ten to twelve cart loads per acre, spread evenly over the ground, from a cart or wagon, and harrowed or ploughed immediately in.

In the use of ashes, those wishing to have the full benefit of a first crop of winter grain, should put them on in the

month of August, September, or by the middle of October. I once sowed part of a field of rye the first week in September, disappointment in getting ashes for the residue, prevented my sowing until the first week in November; difference more than three to one in favour of the first sown. If sown early, the nutritious qualities of the ashes are imparted to the earth, and from the earth to the plant. If late sown, the grain receives no benefit from the ashes, until the warm rains in the spring, when too late to materially benefit the first crop, (except when the land is saturated with ashes or other manure.) I have seen it backen a crop, and create mildew and rust, as is sometimes the case in sowing plaster on wheat, in the spring keeps it green, and prevents its ripening.

2. Did you purchase horse or stable manure at the same time, and try the difference with ashes, and compare prices and results?

Ans. In 1808, I had them spread on adjoining lands, in the same field, on different plans. The first crop of winter grain preferable from the stable-manure, and every succeeding crop quite deficient. Though seventeen years have elapsed, the contrast is still great. The land spread with ashes, shows, every spring, an abundance of white clover; while, on that spread with barn-yard and stable-manure, there is but little or none to be seen.

3. Have you ever tried the street manure of Philadelphia? At what time? The quantity per acre, price, and result?

Ans. I have made use of this manure, occasionally, for the last ten years; the quantity per acre from twenty to twenty-five cart loads; price, about forty cents the load, in Philadelphia; result more certain than ashes or stable-manure for the first winter crop; much better for succeeding crops than stable-manure, though quite deficient compared with ashes.

4. Have you ever experienced the use of lime as a manure, the quantity per acre, price, time you commenced, and what is the result?

Ans. I have, though not until within the last five years. I was induced to make trial of it, from what I had seen and heard on my annual excursion of about a thousand miles over the most fertile, populous, and improved land of Pennsylvania, for the last eighteen years. I discovered, in the interior of that state, land in the highest state of cultivation

from the use of lime and plaster. I also discovered, that land in a high state of cultivation, a few years past, declining in its fertility. Upon inquiry, I found that they had abandoned the use of lime, the most expensive, and depended upon the least expensive article, plaster, until their lands had become exhausted, and, in some instances, worthless, for farming purposes, under the plaster system alone. Many, in despair, abandoned the use of plaster, and commenced liming, and soon restored the land to its former fertility;—while others, and the most experienced farmers, find lime and plaster, in conjunction, possess the most advantageous effect, the lime acting as food for the soil, and the plaster for the plant; the one, to ameliorate the soil,—the other, to excite it to action.

Most of the extensive farmers of Lancaster and Chester counties, have kilns erected on their farms, collect and burn the lime-stone at the most leisure season, at an expense not exceeding from six to ten cents the bushel, and put it upon the land at different seasons, and for different crops, from twenty-five to a hundred bushels per acre; though, upon worn out land, about thirty bushels appears to be the most approved quantity. I commenced my experiment at thirty bushels per acre, upon a loam naturally good, though worn out, with twenty cart loads of stable manure, upon adjoining land in the same field and condition, sowed with rye and timothy seed, second week in September; clover, first week in March following. Result:—crop of rye from stable manure, twelve bushels per acre; crop of rye from limed land, four bushels per acre, not ripe or cut for seven days after the stable-manure; the rye injured with mildew and rust, as are most backened or backward crops. Grass on the limed land much the best, both as to hay and pasture; continued to increase, while that, where the stable-manure was put, diminished. Expense of each:

| | |
|--------------------------------------------------|---------|
| Stable-manure, twenty loads to the acre, | \$20 00 |
| Carting one and a half miles, five loads per day | |
| —team, one dollar and fifty cents per day, | |
| or thirty cents the load, - - - | 6 00 |
| | <hr/> |
| | \$26 00 |

| | | | |
|--------------------------------------------------------------------------------------|---|---|-----------|
| Thirty bushels of lime from Leheigh or New Hope, delivered upon the same landing, at | | | |
| twenty-two cents per bushel, | - | - | \$6 60 |
| Carting one load, | - | - | 30 |
| | | | <hr/> |
| | | | \$ 6 90 |
| | | | <hr/> |
| Difference in the expense per acre, | | | - \$19 10 |

Thus you observe the difference in the expense of transportation of a mile and a half, almost equal to the whole cost of the lime delivered upon the premises.

When manuring with lime, the first cost is incurred, and nearly all is said. I am well satisfied, from experience of twenty-two years, of ashes and lime as manures; and, from what I have seen for the last eighteen years, and experienced for five years, lime to be much cheaper and more durable for grain or grass, than any manure that I have a knowledge of. I am, however, fully satisfied, that it would be better to procure either, than to be employed in tilling land that gives a crop below profit; that is rather the amusement of folly, than food for the purse. However, it may be within the means of the farmer to purchase manure, he must not forget that the *barn-yard is his mine, his manure his gold dust!* We should not anticipate additional crops, without the improvement of our soil; and to do that, it is necessary to secure grass and hay;—as, without stock, no manure—and without manure, no crop.

The art of farming is not an acquirement of a day, but of years, or rather a long life of experience; that which might be adapted to one farm advantageously, would be improper on an adjoining one, owing to difference of soil, &c. Book farmers, for want of experience, too generally lay down one general rule to be adhered to on all occasions. A physician might as well undertake to restore all his patients from an invariable course of medicine, however different their complaints or habit of body, as all farmers to restore their lands by one given course, however different might be their soil, climate, or locality, to the different manures and price. Such manures and crops should be selected as are best adapted to the soil and climate, and a mature calculation of the expense in the cultivation and hauling to market, produce the greatest clear profit. I am, very respectfully, your friend, &c.

B. B. COOPER.

ART. III.—*On Seeds of Vegetables.*

[FROM DEAN'S NEW ENGLAND FARMER.]

The last product, by which their species are propagated, being frequently all the fruit of a plant, but sometimes only a part included in the plant. Every seed contains a plant in embryo. The embryo, which is the whole future plant in miniature, is called the gerin or bud; and is rooted in the cotyledon or placenta, which makes its involucrum, or cover. The cotyledon is always double; and the middle or double centre of the two, is a point or speck, namely the embryo plantule, which being acted on by the warmth of the sun and of the earth, begins to protude its radicle or root, downwards, and soon after, its plumula or bud, upwards; and, as the requisite heat continues, it draws nourishment by the root, and so continues to unfold itself and grow. The two cotyledons of a seed, are a case to the little embryo plant; covering it up and sheltering it from injuries, and feeding it with its own proper substance, which the plantule receives and draws to itself by an infinite number of little filaments, which it sends into the body of the placenta. The cotyledons, for the most part, abound with a balsam, disposed in proper cells; and this seems to be oil, brought to its greatest perfection, while it remains tumid, and lodged in these repositories. One part of the composition of this balsam is oily and tenacious, and serves to defend the embryo from any extraneous moisture; and, by its viscosity, to entangle and retain the fine, pure, volatile spirit, which is the ultimate production of the plant. This oil is never observed to enter into the vessels of the embryo, which are too fine to admit of so thick a fluid. The spirit, however, being quickened by an active power, may possibly breath a vital principle into the juices that nourish the embryo, and stamp upon it the character that distinguishes the family; after which every thing is changed into the proper nature of that particular plant. Now, when the seed is committed to the earth, the placenta still adheres to the embryo for some time, and guards it from the excess of noxious colds, &c. and even prepares and purifies the cruder juice, which the young plant is to receive from the earth, by straining it through its own body. This it continues to do, till the embryo plant being a little enured to its new element, and its root tolerably fixed in the ground, and fit to absorb the

juice thereof, it then perishes, and the plant may be said to be delivered; so that nature observes the same method in plants, as in animals, in the mother's womb. Many sorts of seeds will continue good for several years, and retain their vegetative faculty; whereas, others will not grow after they are one year old. This difference is, in a great measure, owing to their abounding more or less with oil; as also to the nature of the oil, and the texture of their outward covering. All seeds require some share of fresh air, to keep the germen in a healthy state; and, where the air is absolutely excluded, the vegetative quality of the seeds will soon be lost. But seeds will be longest of all preserved in the earth, provided they are buried so deep as to be beyond the influence of the sun and showers; since they have been found to lie thus buried twenty or thirty years, and yet vegetate as well as new seeds. How the vegetative life is so long preserved, by burying them so deep, is very difficult to explain; but, as the fact is very well known, it accounts for the production of plants out of earth taken from the bottom of vaults, houses, &c. In the common method of sowing seeds, there are many kinds which require to be sown soon after they are ripe; and there are many others which lie in the ground a year, sometimes two or three years, before the plant comes up. Hence, when seeds brought from distant countries are sown, the ground should not be disturbed, at least for two years, for fear of destroying the young plants.

As to the method of preserving seeds, the dry kinds are best kept in their pods or outward coverings; but the seeds of all soft fruits, as cucumbers, melons, &c. must be cleansed from the pulp and mucilage which surround them; otherwise, the rotting of these parts will corrupt the seeds.

When seeds are gathered, it should always be done in dry weather; and then they should be hung up in bags in a dry room, so as not to deprive them of air.

The seeds of plants exalted by cultivation, always furnish large and improved varieties; but the flavor, and even the color of the fruit seems to be a matter of accident. Thus a hundred seeds of the golden pippin, will all produce fine large leaved apple trees, bearing fruit of considerable size; but the tastes and colors of the apples from each will be different, and none will be the same in kind as those of the pippin itself. Some will be sweet, some sour, some bitter,

some mawkish, some aromatic, some yellow, some green, some red, some streaked. All the apples will, however, be more perfect than those from the seeds of the crab, which produce trees all of the same kind, and all bearing sour and diminutive fruit.

It has been recommended, when seeds are intended to be sent a great distance, or it is wished to preserve them a long time, to wrap them in absorbent paper, and surround them by moist brown sugar.

Mr. Humboldt has found, that seeds, which do not commonly germinate, become capable of germinating when immersed in *oxygenated muriatic acid gas*, mixed with water. If the liquid be a little warmed, it will quicken the vegetation of seeds surprisingly. Cresses thus treated, exhibited germs in three hours. Seeds which were more than an hundred years old, were also made to vegetate by those means.

Old seeds may likewise be made to germinate, by immersing them in water nearly boiling hot, for about half a minute, and cooling them suddenly, by exposure to air. But if such seeds are sown when the earth is cold, they will rot in the ground.

ART IV.—*On the best Mode of growing such Culinary Vegetables, as are raised annually from Seed; by Mr. W. B. ROSE, Gardener to F. CANNING, Esq. at Foxcote House.*

[FROM THE GARDENER'S MAGAZINE.]

Sir,—The plan I adopt for growing all garden-crops usually raised from seeds, and not transplanted afterwards, such as turnips, carrots, onions, lettuce, radishes, &c. is, to sow them in drills of different degrees of width and depth, according to the size of the seeds and the plants produced. As soon as they rise through the ground, I commence thinning and hoeing, repeating the operation several times, especially the hoeing between the rows. The advantage of frequently stirring the ground about plants, is known; but it may not be obvious to every one, that the soil can be stirred much deeper, when the hoe works along a continued straight line, as it does between rows, than it can be when it works in curves or irregular roundish spaces of limited ex-

tent, as it does among crops sown broadcast. I sow my onions in rows, six inches apart, and I can stir between them to the depth of nine inches, or a foot, if I choose; but, if they were sown broadcast, and every plant six inches from every other, I could not stir between them, with a common hoe, deeper than one or two inches.

Stirring deep and frequently, renders watering unnecessary, because a porous substance is less impervious to the heat of the sun than a solid one, and therefore keeps the ground beneath both cooler and moister. Any gardener who doubts this being the case, may convince himself of the fact, by covering part of a bed of onions with three inches of rotten tan, and comparing the soil beneath the tan, with that left bare, as to heat and dryness.

Such a summer as the last, proves the value of my plan; while the seedling crops of many of my neighbours were burnt up, mine were in luxuriance; my onions stood regularly at six inches apart, and were from eight inches to twelve inches in circumference; my carrots and parsnips stood at eight and ten inches, and measured from ten to fourteen inches in circumference, and all my other crops were in proportion. Some young trees, such as acacias, (Cobbett's locusts,) which I drilled in May last, and thinned out and stirred between the rows, are now three feet high. I have these and other articles ready to show in proof of what I assert.

My soil is a deep sour clay, which I dig and dung before winter; going as deep as the soil will admit, as I find it a great advantage to bring up fresh earth. I am, Sir, &c.

W. B. ROSE.

ART. V.—*On a superior Method of raising the Vine from Layers; by Mr. W. GREEN.*

The following method of propagating grape vines in the open air, succeeds far better than any other:—Make a layer or layers in pots, of the usual size, any time before June; for, if they are laid ever so early in the spring, they will make no roots before the middle of July. It is not necessary to wring, pierce, twist, or tongue the shoots before they are

laid, as they will put forth abundance of roots without any operation of this kind; they only require to be well supplied with water. Separate the layers from the stool in the last week in August; plant them immediately where they are intended to remain; keep them well supplied with water during the remainder of the autumn, and they will make roots a yard long before the winter sets in. Shorten the young plants to one or two eyes, and they will shoot strong and fine in the succeeding spring.

If they are suffered to remain on the old stool after the last week in August, it will be found, upon inspection, that they have less and less roots every time they are examined, as they die off; and, when not planted before the spring, when that time arrives, it will be found that there is scarcely any root left alive. The points upon which I lay most stress are these,—to keep them well supplied with water—to separate the young plants from the old stool not later than the last week in August, and to plant them immediately where they are intended to remain. I intend these directions to apply solely to vines propagated in the open air, without any heat or other artificial assistance.

WILLIAM GREEN.

Stepney, February, 1827.

ART. VI.—*On the Management of Dairies in Devonshire, England.*

[FROM THE NEW-ENGLAND FARMER.]

“The milk is put into tin or earthen pans, holding about ten or twelve quarts each. The evening’s meal is placed in the following morning, and the morning’s milk is placed in the afternoon, upon broad iron plates, heated by a small furnace, or otherwise over stoves, where, exposed to a gentle fire, they remain until after the whole body of cream is supposed to have formed upon the surface, which, being gently removed by the edge of a spoon or ladle, small air bubbles will begin to rise, that denote the approach of a boiling heat, when the pans must be removed off the heated plate or stoves. The cream remains upon the milk in this state, until quite cold, when it may be removed into a churn, or,

as is more frequently the case, into an open vessel, and there moved by a stick about a foot long, at the end of which is fixed a sort of peal, from four to six inches in diameter, and with which about twelve pounds of butter may be separated from the butter-milk at a time.

“The butter, in both cases, being found to separate much more freely, and sooner to coagulate into a mass, than in the ordinary way, when churned from raw cream, that may have been several days in gathering; and, at the same time will answer a more valuable purpose for preserving, which should be first salted in the usual way; then placed in convenient sized egg-shaped earthen crocks, and always kept covered with pickle, made strong enough to float and buoy up about half out of the brine, a new laid egg. This cream before churning, is the clouted cream, so much celebrated in Devonshire. Although it would be reasonable to suppose, that the scalding of the milk must have occasioned the whole of the oily or unctuous matter to form upon the surface, still experience shows that is not the case, and that the scalded skimmed milk is much richer and better for the purposes of suckling, and makes far better cheese than the raw skimmed milk does.

“The ordinary produce of milk per day, for the first twenty weeks after calving, is three gallons, and is equal to the producing of a pound and a quarter of butter daily, by the scalding process. The scalded skimmed milk is valued at $1\frac{1}{2}d.$ per quart, either for cheese making or feeding hogs. The sum of the trials, procured to be made on the milk in several parts of this district, gives an average of twelve pints of milk to ten ounces of butter. When cheese is to be made, (but in which manufacture there does not appear to be any superior excellence in Devonshire,) great care is taken that the milk is not heated so far as to produce bubbles under the cream.

“Although these statements will be found considerably short of the average produce from cows of a larger size, and probably much better adapted for the pail, still there are not wanting instances of what must be regarded as extraordinary produce among the North Devon cows.

“In the neighbourhood of Molland Bouceaux, a single cow, judged to be rather less than eight score per quarter, within three weeks from the time of calving, yielded, in seven successive days, seventeen pounds and a half of butter; se-

veral of the meals of milk were measured during this time, which gave an average of fourteen pints per meal;—instances also occurred in other parts of the district, of two pounds of butter per day, being obtained from cows within a short time after calving; and it is particularly clear in the recollection of a gentleman in the neighbourhood of Bishop's Tawton, that some years since, a cow of the common red breed, after her second or third calf, which she had between Michaelmas (27th September) and Christmas, yielded, without any particular attention being paid to food or treatment, during a considerable time of the ensuing winter, two pounds and a half of butter per day; this cow living at the time in common with the other dairy cows, which were permitted in the day time to range over all the old pasture grounds, and regularly foddered morning and evening with hay in the same field."—*Vancouver's Survey of Devonshire.*

FROM HINTS FOR AMERICAN HUSBANDRY.

ART. VII.—*On the Saccharum of the Sweet Potatoe, and its Fitness to make Beer; by ROBERT HARE, M.D. Professor of Chemistry in the University of Pennsylvania.*

To John Hare Powell, Esq. Corres. Sec. of the Penn. Agricultural Society.

Dr. Tidyman, of South-Carolina, lately supplied me with some sweet potatoes, of a kind in which sweet matter is peculiarly abundant, and requested that I would ascertain if there were any sugar in them. Having pared, and by means of the instrument used for slicing cabbages or cucumbers, reduced them to very thin slices; about a pound was boiled in alcohol, of the specific gravity of .845, which appeared to extract all the sweetness, yet, on cooling, yielded no crystals of sugar. The solution being subjected to distillation, till the alcohol was removed, an uncrystallizable syrup remained. In like manner, when aqueous infusions of the potatoes were concentrated, by boiling or evaporation, the residual syrup was uncrystallizable. It appears, therefore, that the sweet matter of this vegetable is analogous to molasses, or the saccharum of malt.

Its resemblance to the latter was so remarkable, that I was led to boil a wort, made from the potatoes, of proper spissitude, say s.g. 1060, with a due quantity of hops, about two hours.

It was then cooled to about 65 degrees, and yeast was added. As far as I could judge, the phenomena of the fermentation, and the resulting liquor, were precisely the same as if malt had been used. The wort was kept in a warm place, until the temperature 65 F. and the fall of the head, showed the attenuation to be sufficient. Yeast subsequently rose, which was removed by a spoon. By refrigeration, a further quantity of yeast precipitated, from which the liquor being decanted, became tolerably fine for new beer, and in flavour, exactly like ale made from malt.

I have computed, that five bushels of potatoes, would produce as much wort as three bushels of malt; but I suppose that the residue would, as food for cattle, be worth half as much as the potatoes employed.

I believe it possible to make as good liquor from malt in this country, as in England; but, that in our climate, much more vigilance is required to have it invariably good, principally because the great and sudden changes of temperature, render malting much more precarious. Should the saccharum of the sweet potatoe prove to be a competent substitute for that of germinated grain, the quality will probably be less variable, since its developement requires but little skill and vigilance.

Besides, as it exists naturally in the plant, it may be had, where it would be almost impossible to make, or procure malt. Hops, the other material for beer, require only picking and drying to perfect them for use.

They are indigenous to the United States, and may, no doubt, be raised in any part of our territory.

I have dried, in my evaporating oven, some of the sweet potatoes in slices. It seems to me, that in this state they will keep a long while, and may be useful in making leaven for bread. They may take the place of the malt necessary in a certain proportion, to render distillers' wash fermentable. The yeast yielded by the potatoe beer, appeared in odour and flavor, to resemble that from malt beer surprisingly, and the quantity, in proportion, was as great. In raising bread, it was found equally efficacious.

I propose the word *suavin*, from the Latin *suavis*, sweet, to distinguish the syrup of the sweet potatoe. The same word, might, perhaps, be advantageously applied as a generic appellation to mollasses, and the uncrystallizable sugar of grapes, of honey, and of malt. Crystallizable sugar might be termed *saccharine*, since the terminating syllable of *saccharum*, is appropriated in chemistry to metals.

PART III.

MISCELLANEOUS AGRICULTURAL ITEMS.

DOMESTIC.

Silk-Worms.—From comparative observations which have been made on the silk, from Italian worms with yellow balls, and the Chinese race with white balls, it is proved, that although the silk produced by the former is much more abundant, that produced by the latter is much more brilliant.—*American Farmer.*

Poultry.—It is said that hens may be made to lay eggs during the winter season, when their laying powers are usually dormant, by the following cheap and simple means:—

“Dilute and mix two ounces glauher salts in a dish of cold porridge, or any other food, and scatter the same well about the poultry yard, so that no bird may eat too much; and, if the effects are not apparent in two or three days, repeat the dose at short intervals, till the accumulation of eggs indicate that you have gone far enough.”—*Ib.*

Cotton and Sugar.—Let us for a moment, draw a comparative view of the profits arising from the culture of cotton and the sugar-cane. One hand, with the portion of corn necessary to be raised on a farm, connected with other incidental circumstances, will not raise more than 6000 pounds of cotton, which, when ginned and packed, is equal to 1500 pounds; this sold, say at eight cents, amounts to \$120. This calculation, we conceive, on an average, will be found to be more than is realized. Five acres of sugar-cane, the quantity we allow to one hand, will, according to a previous calculation, nett 5000 pounds of sugar, which, sold at eight cents per pound, is equal to \$400, being \$280 more to the hand than is realized from cotton. The molasses is omitted to be included with the sugar, being left as set off against the incidental expenses attending the latter. The great difference in profit between the two articles is then manifest; and to the agriculturist of Alabama we would say, “How long wilt thou slumber?” It has been a subject of some contention, as to the number of hands that would have necessarily to be employed on one farm. Few have attempted sugar on a small scale, but the correctness of the opinion may be doubted, that only very large capitals can be employed to advantage on a sugar

farm. No good reason, except we admit custom as logic, can be given, why five, ten, or fifteen men, may not make a proportional quantity of sugar, as well as of cotton or corn. When the subject is examined seriously and separately, the rich reward that is promised to the farmer of Alabama, from the culture of the sugar-cane, will not appear delusive.—*Alabama Journal*.

Steam Plough.—The application of *Steam to Agriculture*, has hitherto been confined to putting in motion some thrashing machines; but, as steam will probably in a short time be applied to the dragging of heavy wagons on the public roads, the succeeding step will not unlikely be its adaptation to the implements of aration.

The advantages of ploughing and harrowing by steam, promise to be considerable in every country, but especially in an uncertain climate. The soil can only be stirred with advantage, when in a moderately dry state, and in dry weather. To enable a large farmer to accomplish this, he must keep a considerable stock of horses and men, which, in unfavourable weather cannot be employed, but must be fed and lodged. A steam plough, guided by one man, which could do the work of six pair of horses and six men, would cost nothing but during the hours it was in action; there would, therefore, be no temptation on the part of the farmer, to use it in bad weather. Any agricultural implement drawn by horses, can only move at a certain rate per hour; but a steam plough or harrow might be made to move at any rate of rapidity, and, at all events, at three times the rate of a plough and pair. The advantage of such a rapid mode of stirring the soil in a variable season in any country, and in rapid climates, such as those of northern and tropical countries, will be appreciated by the agriculturist. In short, the power of steam would give the cultivator an unlimited command of labour at the moments favourable to labouring; and fifty acres a-day might be ploughed with one machine and one man, as easily as they are now ploughed by fifty days' work of one plough, or ten days' work of five ploughs.

The sort of implement best adapted for stirring the soil by the power of steam, is the next idea that presents itself. Every cultivator, we think, will agree, that it must be some implement of the grubber kind, and by far the best of these, is what is called Finlayson's Harrow. This implement may be enlarged so as to cover any breadth, and regulated so as to go to any depth; and the latter object is effected to such a nicety, that it has been used on the same farm to harrow in grass seeds, and to grub or stir the soil to the depth of twelve inches. Those who have not seen an implement of the grubber kind at work, may question its fitness as a substitute for the plough; but, where the soil is dry, and the grubber can be dragged across it in different directions, it will not

only equal but far surpass the plough in every case in which literary manure is not to be ploughed in, or a tough sward to be turned over. The effectual manner in which this implement mixes the top and bottom of the soil together, and breaks all the parts of the soil to pieces, was completely shown last year in that part of Hyde Park submitted to its operations, under the direction of Mr. Shedden, the surveyor. We understand that the whole of the Park is to undergo the same process next year, and we should certainly like to see the power of steam tried instead of horses.

But how is manure to be ploughed in, or a turf sward to be turned over, by the power of steam? Instead of the prongs of Finlayson's harrow, substitute the self-cleaning coulter and shares of his self-cleaning plough, regulated as to depth by wheels. Any number of these will work together without a holder, just as well as any number of prongs. Nothing can be easier than to construct a steam plough with the shares and mould-boards contrived so as to shift and adjust, for the purpose of forming drills or ridgelets, and splitting them down; and the harrow, with a rake attached, and some other easy contrivances, and two attendants, might be made to unearth a field of potatoes, collect them, and deliver them into baskets or sacks, (the same as to stones or weeds,) which, as filled, might be put into carts, at the rate of fifty acres a-day, or a much greater number, with as much ease as the same machine would afterwards prepare the soil for wheat, and harrow in the seed.

It must always be recollected, in favour of steam ploughs and harrows, that no holder whatever will be required, and that an engine of twenty ploughs' power would be guided by one man just as easily as one of half that capacity.

The power of selecting, for the performance of all the principal ploughings and harrowings of the largest farm, whether when the soil was in the fittest state for being laboured, and of executing those labours at any time in two or three days, must also be taken into account. Add the saving of horse food, of risk from diseases and death, of horse lodging, of men as ploughmen and carters, and of capital; because a steam-engine of twenty horses' power, adapted to impel ploughs, harrows, wagons, sowing, mowing, and reaping machines, would certainly cost less than twenty horses and their harness. One or two pair of horses might, under such an arrangement, be all that was necessary on even the largest farm.

If small farmers could not afford to purchase steam ploughs or steam harrows, a class of men would arise, after a trial was made, and their value determined, who would possess such machines, and work them for the farmers for hire. There would be nothing in such an arrangement more than a new application of the principle of the division of labour.

Possibly the progress of civilization, refinement, and wealth, in consequence of the unrestricted commercial intercourse of all countries, and the universal diffusion of knowledge among all ranks, may ultimately tend to what may be called a characteristic appropriation of the earth's surface; that is, to the employment of varied and agreeable surfaces, in favourable climates, as human residences; and of flat, dull, mountainous, or unhealthy surfaces for the growth of corn, timber, or fuel, and the breeding of live stock. The power of steam would cultivate the flat surfaces, and convey their produce from one end of a kingdom to another as easily and rapidly as men and horses now convey their produce through a parish; and, as Dr. Arnott observes, the house and grounds of a citizen of London, now twenty miles from town, would, by the rapidity of conveyance, become in effect within two miles. But, if such a result, in regard to the world generally, is very remote, it will hardly be denied that it is a very possible case in regard to Europe; and it will not occupy much space, to notice the suitableness of the surface of Europe for such an arrangement. No country is, in almost every part, so well adapted for human residences, as England; even Italy has its unhealthy districts; and there are extensive plains in Spain, France, Germany, and Russia, better adapted for bearing corn, than for that kind of domestic agriculture adapted to the country residences of men of leisure. By far the greater portion of Russia is, from its climate and flat surface, totally unfit for the elegant or even comfortable enjoyment of a country life; taking the average of its whole extent, it may be said to be half the year under snow; spring and autumn are in a great measure wanting, and the mid-day heat of summer, is as great as in Italy; the inhabitants, therefore, are necessarily without most of the elegant enjoyments of agriculture and gardening, and without most of the natural beauties of country scenery. But the whole territory, from the Baltic to the Black Sea, is admirably adapted for the culture of corn; and this, in a great degree, for the very reasons why it is so ill adapted for rural enjoyment. In consequence of the prolonged covering of snow, no soil is prepared for the seed with so little labour; none requires so little manure; none is so free from root weeds; and no surface is more even, less in want of draining or irrigation, or less liable to suffer from drought or rain. All these circumstances are particularly favourable for the culture of annual plants. Corn is an annual which comes rapidly to perfection, and therefore can be grown in as great abundance in Russia, as in France or Spain, and far better than in Germany, where the soil is in many parts arid. Russia, therefore, seems formed by nature to be the corn and potatoe field of Europe; and, if ever this should take place, the employment of steam in agriculture will there be exhibited to as great advantage as its employment in manufacture is in England. But we shall submit

to much of what we have advanced being called wild speculation, provided we shall hear of some one adapting the steam-engine to the plough or harrow.—*Gar. Magazine.*

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Keeping Pine Apples.—A pine apple will keep for a long time when its crown is removed, and will also be greatly improved in flavour, for the most aqueous parts of the fruit gradually evaporate, and leave it much more saccharine and vinous in its flavour; which natural process is totally destroyed by the vegetation of the crown, just upon the same principle that an onion or carrot loses its flavour, when it begins to sprout in the spring.—*Ib.*

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New Cotton.—We have frequently had occasion to call the attention of our readers to cotton plants, which continued alive the last winter, and put out afresh in the spring, giving promise of an early harvest. A sample of *new cotton*, the production of similar plants, has been politely sent us by Mr. Shad. It contains the several qualities of what is considered good cotton—whiteness, fineness, and length of staple. The seeds are as well clothed as any cotton we have ever seen of the kind denominated Sea Island, or Black-Seed.—*Sav. Georgian, 8th July.*

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FOREIGN.

Spártium nubigénium, the White Retama, or White Broom, of the Canary Islands.—The honey made by the bees upon the Peak of Teneriffe, has long been celebrated. Every village in the neighbourhood in the month of May, carries its bee-hives, which are hollow stems of the dragon tree, and places them in the crevices of the rocks. Millions of bees then swarm around the large and fragrant white bushes of the white retama, and very soon fill their hive. The honey is taken from them twice every summer, always in great abundance, and neither Hymettus nor Chamouny have ever produced any thing equal to it, it is so pure and transparent, and the taste so aromatic and delicious. Whoever, indeed, would import this bush to the bees of Europe, would deserve as well of his countrymen as he who introduced the vine and fruit trees; and this would be by no means difficult, for spártium grows perfectly well here, where snow lies almost continually from December till the middle of April, and even where the lowness of the temperature checks the vegetation of every kind of tree. It might thrive extremely well in the interior of Norway, in Austria, and Poland. But no one has been hitherto successful in raising it in Europe; and every thing that has been said of its flourishing in botanical gardens is erroneous.—(*Prof. Jamison's Philadelphia Journal, December, 1826.*)

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